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[54] **EXPERT SYSTEM FOR ASSESSING ACCURACY OF MODELS OF PHYSICAL PHENOMENA AND FOR SELECTING ALTERNATE MODELS IN THE PRESENCE OF NOISE**

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[58] **Field of Search** 364/516, 517, 552, 554, 364/578; 382/39, 36, 37, 38, 25, 16, 10; 356/16, 17, 3; 235/400, 401, 411; 395/50

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[57] **ABSTRACT**

A system for providing an iterative method of assessing accuracy of selected models of physical phenomena and for determining selection of alternate models in response to a data sequence in the presence of noise. Initially, a residual sequence is generated reflecting difference values between in response to said data sequence and an expected data sequence as would be represented by a selected model. Feature estimate values of a plurality of predetermined data features in the residual sequence are then generated. In response to the feature estimate values, a threshold value is generated for each feature at an estimated ratio of data to noise. Probability values are generated in response to the threshold value, representing the likelihood that the feature exists in the data sequence, does not exist in the data sequence, and that the existence or non-existence in the data sequence is not determinable. Finally, a model is selected in response to the probability values for use during a subsequent iteration.

21 Claims, 5 Drawing Sheets